

In the Claims

1. [Currently Amended] A semiconductor processor system comprising:

a process chamber adapted to process at least one semiconductor workpiece using a process fluid;

a connection coupled with the process chamber and configured to receive the process fluid and to supply the process fluid to the process chamber;

~~a sensor coupled with the connection and configured to output a signal~~ signals indicative of ~~the process fluid~~ turbidities of fluids within the connection;

~~a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal~~;

~~wherein the sensor is configured to monitor turbidity of the process fluid~~;

~~wherein the connection is adapted to couple with a process fluid supply and is configured to supply process fluid from the process fluid supply to the process chamber~~;

and

a flush system coupled with the connection and configured to selectively flush the connection; and

a control system coupled with the sensor and configured to control at least one operation of the flush system with respect to flushing the connection using the signals.

2. [Original] The system according to claim 1 wherein the connection comprises a connection of a sampling system configured to provide the process fluid in a substantially static state.

3. [Previously Presented] The system according to claim 2 wherein the control system is configured to compare the substantially static process fluid with a signature to determine at least one characteristic of the process fluid.

4. [Original] The system according to claim 3 wherein the control system is configured to control a flow rate of the process fluid into the process chamber responsive to the comparison.

5. [Original] The system according to claim 4 wherein the control system is configured to halt processing within the process chamber responsive to the comparison.

Claims 6-9 [cancelled].

10. [Original] The system according to claim 1 wherein the sensor is configured to output a signal indicative of accumulation of particulate matter within the connection.

11. [Original] The system according to claim 1 wherein the control system is configured to process the signal to monitor processing of the at least one semiconductor workpiece within the process chamber.

12. [Cancelled].

13. [Previously Presented] The system according to claim 1 wherein the flush system is configured to flush the connection with at least one of the process fluid and a rinse fluid.

14. [Previously Presented] The system according to claim 1 wherein the flush system is configured to flush the connection responsive to control from the control system.

15. [Original] The system according to claim 1 further comprising a mixing system configured to mix plural components of the process fluid and the control system is configured to control the mixing system.

16. [Original] The system according to claim 1 further comprising a storage device configured to store historical data corresponding to the process fluid.

17. [Original] The system according to claim 1 wherein the process chamber comprises a process chamber of a chemical-mechanical polishing processor.

18. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;  
a connection coupled with the process chamber and configured to transport the process fluid;

a sampling system coupled with the connection and configured to receive a sample of the process fluid;

a sensor coupled with the sampling system and configured to output a signal indicative of turbidity of the sample of the process fluid; and

a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal;

wherein the sample of the process fluid is in a substantially static state in the sampling system;

wherein the control system is configured to compare the ~~sample of the process fluid~~ signal with a signature to determine at least one characteristic of the process fluid; and

wherein the control system is configured to control a flow rate of the process fluid into the process chamber responsive to the comparison.

Claims 19-21 [cancelled].

22. [Previously Presented] The system according to claim 18 wherein the sensor is configured to monitor a percentage of solids present in a liquid of the process fluid to provide information regarding the turbidity of the process fluid.

23. [Original] The system according to claim 18 wherein the control system is configured to control the sampling system to draw the sample of the process fluid.

24. [Original] The system according to claim 18 wherein the control system is configured to monitor operation of the semiconductor processor system and to control the sampling system to draw the sample during defined operations of the semiconductor processor system.

25. [Original] The system according to claim 18 further comprising a storage device coupled with the sensor and configured to store historical data corresponding to the process fluid.

26. [Original] The system according to claim 18 wherein the process chamber comprises a process chamber of a chemical-mechanical polishing processor.

Claims 27-38 [cancelled].

39. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;  
a process fluid system including:  
a connection coupled with the process chamber and configured to transport process fluid relative to the process chamber;  
a flush system configured to flush the connection using a flush fluid; and  
a sensor coupled with the flush system and configured to output a signal indicative of the turbidity of the flush fluid;

~~a control system coupled with the sensor and configured to control the flush system to flush the connection responsive to the signal; and~~

wherein the a control system [[is]] coupled with the sensor and configured to control the flush system to prime the connection using the flush fluid comprising the process fluid responsive to a start-up operation of the semiconductor processor system and to control the flush system to provide the process fluid used to prime the connection to a drain until the turbidity of the process fluid used to prime the connection is acceptable and to thereafter provide the process fluid to the process chamber responsive to the turbidity of the process fluid being acceptable.

Claims 40-42 [cancelled].

43. [Previously Presented] The system according to claim 39 wherein the control system is configured to control the flush system to rinse the connection responsive to a halt operation of the semiconductor processor system.

44. [Previously Presented] The system according to claim 43 wherein the flush system is configured to rinse the connection with flush fluid comprising rinse fluid responsive to the halt operation.

Claims 45-46 [cancelled].

47. [Previously Presented] The system according to claim 39 wherein the process fluid system is configured to supply process fluid to the process chamber.

48. [Previously Presented] The system according to claim 39 wherein the process chamber comprises a process chamber of a chemical-mechanical polishing processor.

49. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;

a connection configured to transport the process fluid relative to the process chamber;

a sensor coupled with the connection and configured to output a signal indicative of accumulation of particulate matter within the connection;

a control system coupled with the sensor and configured to monitor the accumulation ~~responsive to~~ using the signal; and

a flush system configured to flush the connection and wherein the control system is configured to control the flush system ~~responsive to~~ using the monitoring of the accumulation.

50. [Original] The system according to claim 49 wherein the connection is arranged in a substantially horizontal orientation.

51. [Original] The system according to claim 50 wherein the sensor is arranged to monitor accumulation in a substantially vertical orientation with respect to the connection.

52. [Cancelled].

53. [Original] The system according to claim 49 further comprising a recirculation system configured to recirculate process fluid within the connection and wherein the control system is configured to control the recirculation system responsive to monitoring the accumulation.

54. [Currently Amended] The system according to claim 49 wherein the connection comprises a ~~connection~~ supply pipe configured to provide process fluid to the process chamber.

55. [Original] The system according to claim 49 wherein the connection comprises a drain connection configured to receive process fluid from the process chamber.

56. [Original] The system according to claim 49 wherein the sensor is configured to monitor turbidity of the process fluid.

57. [Original] The system according to claim 49 wherein the process chamber comprises a process chamber of a chemical-mechanical polishing processor.



58. [Currently Amended] A semiconductor workpiece process fluid system comprising:

a connection configured to transport a semiconductor workpiece process fluid relative to a semiconductor process chamber;

a sensor oriented relative to the connection and configured to output a signal indicative of the semiconductor workpiece process fluid;

a control system coupled to receive the signal from the sensor and configured to monitor the semiconductor workpiece process fluid using the signal; and

a drain coupled to the connection, and the control system is configured to control ~~the drain to remove~~ removal of at least a portion of the semiconductor workpiece process fluid from the system ~~responsive to the signal from the sensor~~ via the drain using the monitoring of the semiconductor workpiece process fluid.

59. [Previously Presented] The system according to claim 58 wherein the sensor is configured to output the signal indicative of turbidity of the semiconductor workpiece process fluid.

60. [Previously Presented] The system according to claim 58 wherein the control system is configured to compare the signal with a signature to monitor the semiconductor workpiece process fluid.

61. [Previously Presented] The system according to claim 58 further comprising at least one metering device configured to permit flow of a component of the

semiconductor workpiece process fluid, and the control system is configured to control the metering device to control a flow rate of the component responsive to the signal.

62. [Previously Presented] The system according to claim 58 wherein the process chamber comprises a process chamber of a chemical-mechanical polishing processor.

Claims 63-129 [cancelled].

130. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;  
a connection coupled with the process chamber and configured to receive the process fluid;  
a sensor coupled with the connection and configured to output a signal indicative of the process fluid;  
a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal;  
wherein the connection comprises a connection of a sampling system configured to provide the process fluid in a substantially static state;  
wherein the control system is configured to compare the substantially static process fluid with a signature to determine at least one characteristic of the process fluid; and

wherein the control system is configured to control a flow rate of the process fluid into the process chamber responsive to the comparison; ~~and~~

~~wherein the control system is configured to halt processing within the process chamber responsive to the comparison.~~

Claims 131-132 [cancelled].

133. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process semiconductor workpieces using a process fluid;

a connection coupled with the process chamber and configured to receive the process fluid and to transport the process fluid to a process chamber;

a sensor coupled with the connection and configured to output ~~a signal~~ signals indicative of the ~~process fluid~~ turbidities of fluids within the connection;

~~a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal; and~~

a flush system coupled with the connection and configured to selectively flush the connection with a rinse fluid different than the process fluid; and

a control system configured to control the flush system to cease the flushing of the connection with the rinse fluid using the signals.

134. [Previously Presented] The system according to claim 133 wherein the flush system is configured to flush the connection with the process fluid.

Claims 135-151 [cancelled].

152. [Previously Presented] The system according to claim 49 wherein gravity causes the accumulated particulate matter to accumulate within the connection.

153. [Previously Presented] The system according to claim 49 wherein the sensor is configured to output the signal indicative of accumulation of particulate matter within a portion of the connection arranged to transport the process fluid in a substantially horizontal direction.

Claims 154-162 [cancelled].

163. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;  
a connection coupled with the process chamber and configured to receive the process fluid;  
a sensor coupled with the connection and configured to output a signal indicative of turbidity of the process fluid;  
~~a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal;~~  
~~wherein the sensor is configured to monitor turbidity of the process fluid;~~

wherein the connection comprises a connection of a sampling system configured to provide the process fluid in a substantially static state;

~~wherein the~~ a control system is coupled with the sensor and configured to compare the turbidity of the substantially static process fluid with a signature to determine at least one characteristic of the process fluid;

wherein the control system is configured to control a flow rate of the process fluid into the process chamber ~~responsive to~~ using the comparison; and

~~wherein the control system is configured to halt processing within the process chamber responsive to the comparison.~~

164. [Cancelled].

165. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;

a connection coupled with the process chamber and configured to receive the process fluid;

a sensor coupled with the connection and configured to monitor turbidity of the process fluid and to output a signal indicative of the turbidity of the process fluid;

~~a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal;~~

~~wherein the sensor is configured to monitor turbidity of the process fluid; and~~

a flush system coupled with the connection and configured to selectively flush the connection; and

a control system coupled with the sensor and configured to control at least one operation of the flush system using the signal.

166. [Previously Presented] The system of claim 165 wherein the flush system is configured to flush the connection with a rinse fluid different than the process fluid.

167. [Currently Amended] The system of claim 165 wherein the control system is configured to control the flush system ~~is configured to flush the connection responsive to control from the control system~~ using the signal.

Claims 168-176 [cancelled].

177. [Previously Presented] The system of claim 165 wherein the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to monitor the turbidity of the process fluid.

178. [Cancelled].

179. [Currently Amended] A semiconductor processor system comprising:  
a process chamber adapted to process at least one semiconductor workpiece using a process fluid;

a process fluid system including:

a connection coupled with the process chamber and configured to transport process fluid relative to the process chamber;

a flush system configured to flush the connection using a flush fluid; and

a sensor coupled with the flush system and configured to output a signal indicative of the flush fluid; and

a control system coupled with the sensor and configured to control the flush system to flush the connection ~~responsive to~~ using the signal; and

wherein the control system is configured to control the flush system to rinse the connection responsive to a halt operation of the semiconductor processor system.

180. [Previously Presented] The system of claim 179 wherein the flush system is configured to rinse the connection with flush fluid comprising rinse fluid responsive to the halt operation.

181. [Previously Presented] The system of claim 179 wherein the sensor is configured to monitor turbidity of the flush fluid and the control system is configured to control the flush system ~~responsive to~~ using the turbidity of the flush fluid.

182. [New] The system according to claim 49 wherein the sensor is configured to output the signal indicative of the accumulation of particulate matter within the connection and which is not suspended in fluids present within the connection.

183. [New] The system according to claim 49 wherein the connection comprises a pipe configured to transport the process fluid from a mixing system to the process chamber.

184. [New] The system according to claim 49 wherein the control system is configured to control the flush system to flush the connection using monitoring of the accumulation of the particulate matter within the connection.

185. [New] The system according to claim 50 wherein the connection comprises a pipe and the sensor is configured to output the signal indicative of the accumulation of particulate matter within the connection which is not suspended in fluids present within the connection and which is supported by a wall of the connection.